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# Innovation in Environmental Monitoring

Welcome

We will be with you shortly

The webinar will be recorded

Please use the Q&A feature to post questions and the chat feature to share anything else (feel free to make connections by introducing yourself and your organisation via the chat)



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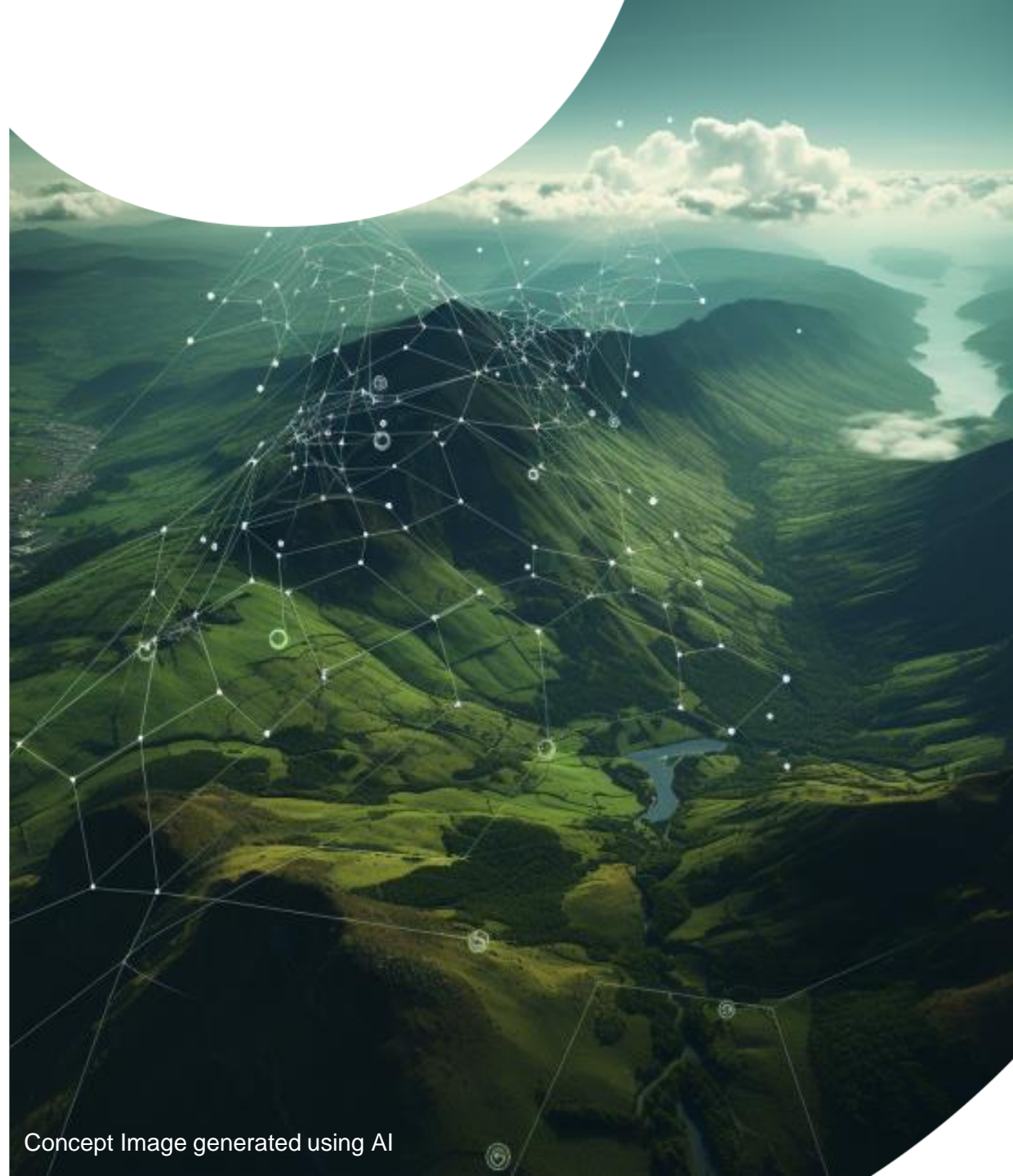
# NERC Webinar: Innovation in Environmental Monitoring (IEM)

**Funding Opportunity Webinar**

11.00am to midday BST on 30 August 2023

# Agenda

1. Welcome and overview – Anna Angus-Smyth, NERC-UKRI
2. NERC policy background – Iain Williams, NERC-UKRI
3. Defra policy drivers – Gideon Henderson, Defra
4. Scope – Helen Fox, Defra
5. Specific requirements of funding opportunity – Emma Morgan, NERC-UKRI
6. Q&A
7. Close – Simon Gardner, NERC-UKRI



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# Introduction to IEM programme

Dr Anna Angus-Smyth,  
Associate Director, Digital Environment,  
Infrastructure and Data, NERC-UKRI

# Innovation in Environmental Monitoring

Defra and UKRI are investing £12 m across 3 years (equal partners)

- NERC-led (£7 million) – research-led activity
- Innovate-UK-led (£5 million) – business-led activity

Integrated programme objectives:

- Development of new sensing systems and monitoring capabilities
- Testing of these products and verifying accuracy and reliability
- Partnerships and collaborations, helping to connect across disciplines
- Understanding of capabilities required for real-world deployment of environmental monitoring systems for broader impact.



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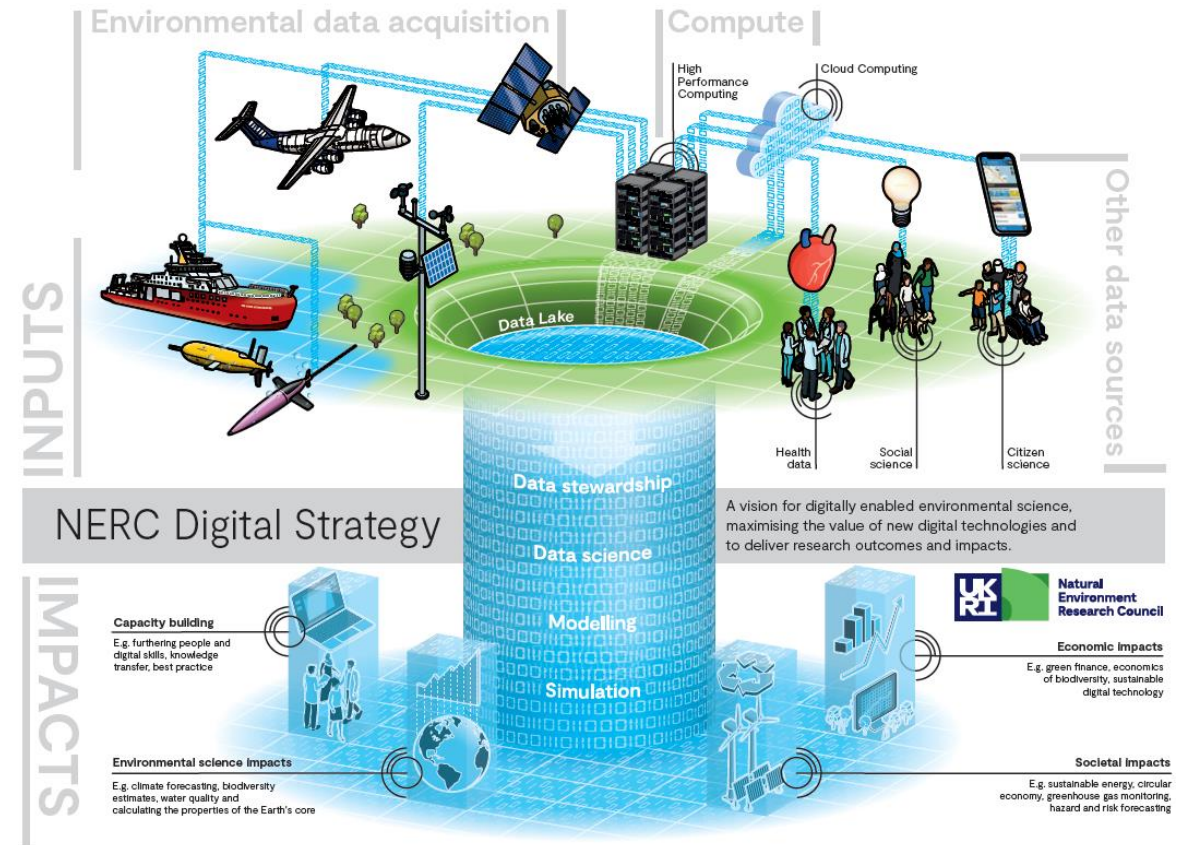
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# **NERC policy background**

**Dr Iain Williams,  
Director, Strategic Partnerships, NERC-UKRI**

# NERC's Digital Strategy

NERC's first [digital strategy](#) sets out a vision for digitally enabled environmental science for the next decade



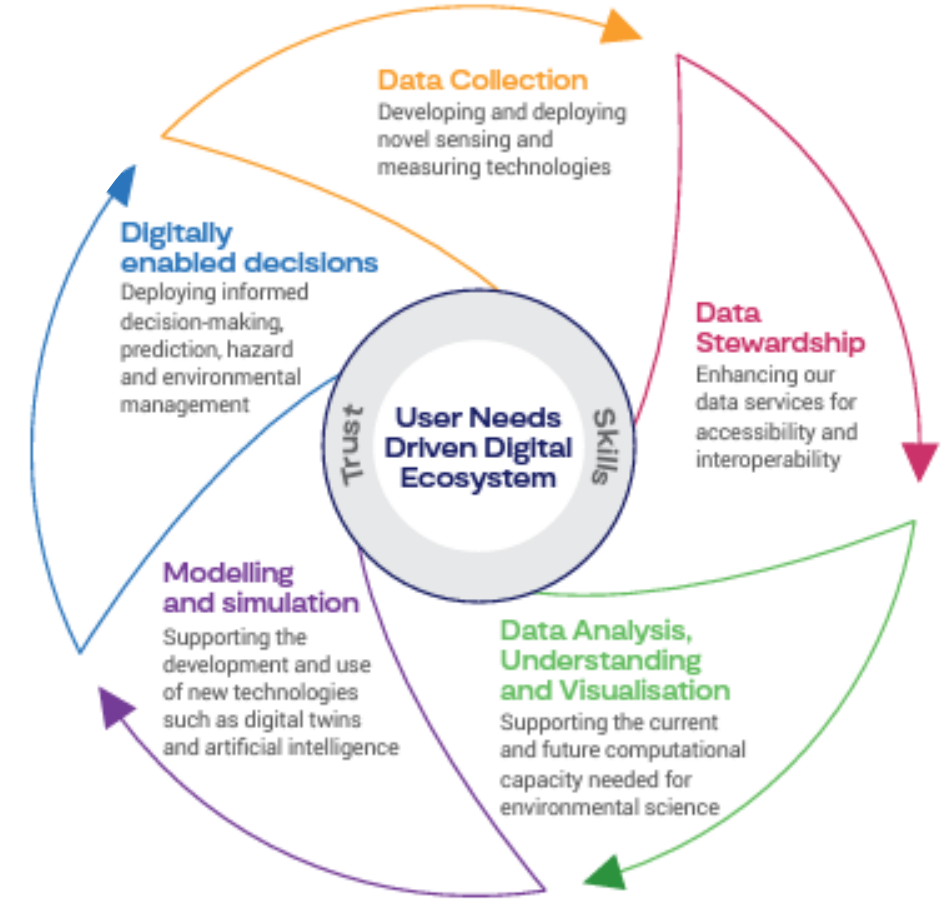
# A Digital Ecosystem Approach

Our vision is to place data and digital technologies at the heart of current and future environmental science, supporting digitally enabled environmental science.



Through the development of:

- next-generation environmental sensing and measurement systems designed for user needs, with effective connectivity and feedback between data capture and use
- an ecosystem of digital infrastructure, embracing sensor networks, data capture and transmission, Big Data technology, modelling and visualisation
- data capture tools and technologies to address environmental science questions





# Real world deployment

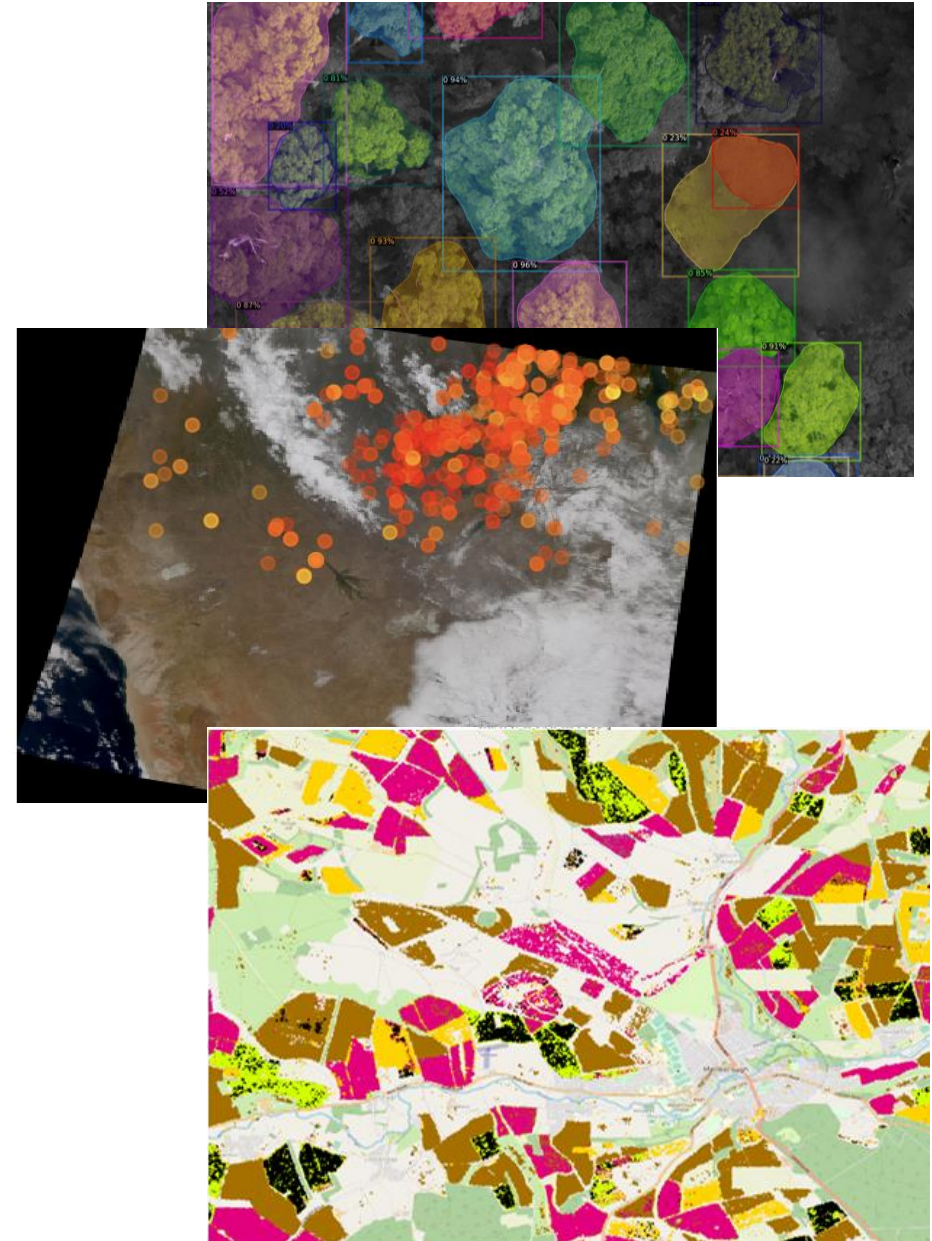
- Monitoring systems for broad impact and use
- Lower cost sensors and sensor networks that maintain accuracy and precision in real world environments:
  - ease of use and maintenance
  - low energy-demand or self-powered (to allow for longer use times)
  - ruggedisation
  - miniaturisation
  - sustainability



AI enhanced photo, original photo credit: Lucy Falkner

# Key challenges

- Reducing costs, improving sustainability and ease of use
- Improving the temporal/spatial resolution of data
- Operating robustly in challenging environments
- Managing increasing size of data flows and complexity of distributed networks
- Compliance with legal obligations of statutory authorities and regulators
- Ensuring trust in monitoring data
- Pathways to further develop innovation





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# Defra policy drivers

**Professor Gideon Henderson,  
Chief Scientific Advisor and DG Science and Analysis  
Department for Environment, Food and Rural Affairs**

# Policy drivers:

Outcome Indicators Framework

25 Year Environment Plan

Net Zero Strategy: Build Back Greener

Environmental Land Management Scheme

England Peat Action Plan (2021)

Nature markets Framework (2023)

Plan for water (2023)

Green finance strategy

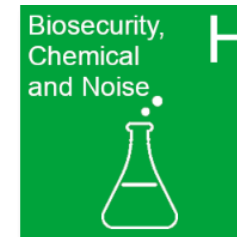
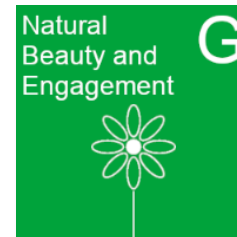
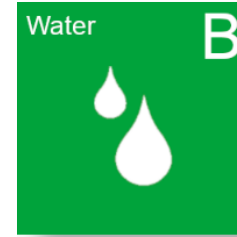
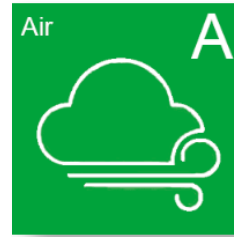


Image Credit: [Outcome Indicators Framework](#)

# An innovation programme for Defra Group on topics with high growth / export potential

This programme will support improvements in the way that key environmental outcomes can be monitored by Government, civil society and private companies, to:

- Enable environmental monitoring organisations to deliver better insights through smarter use of physical inspections and remote monitoring, and automated data analysis
- Reduce the cost of monitoring while maintaining or increasing insight



Credit EA: EA team monitoring emissions from the Dix Pit landfill site in Thames, Cotswold

# An innovation programme for Defra Group on topics with high growth / export potential

This programme will support improvements in the way that key environmental outcomes can be monitored by Government, civil society and private companies, to:

- Encourage investment in nature markets by helping to ensure that the outcomes from nature investment schemes are trusted.



Image Credit: [England Peat Action Plan \(2021\)](#)





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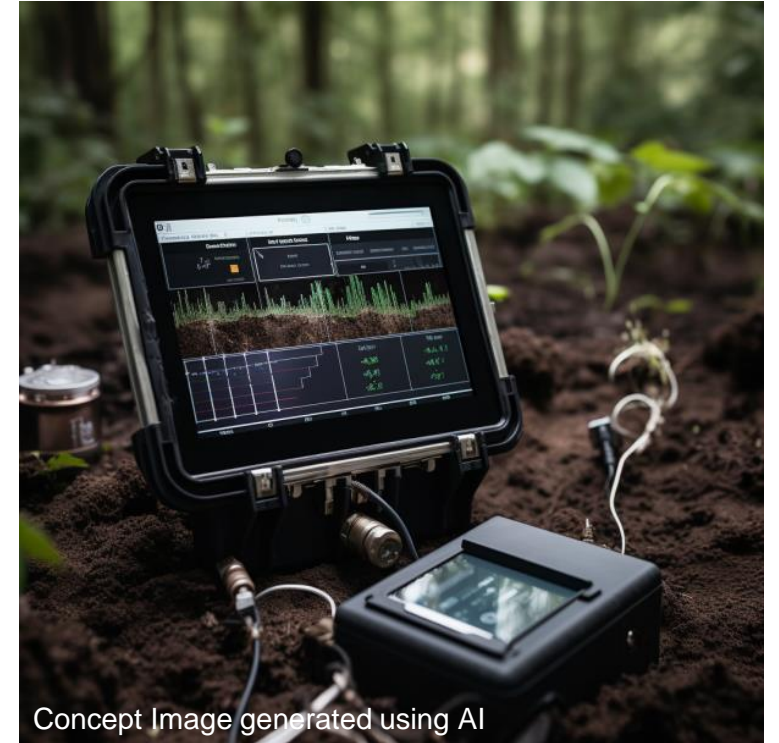
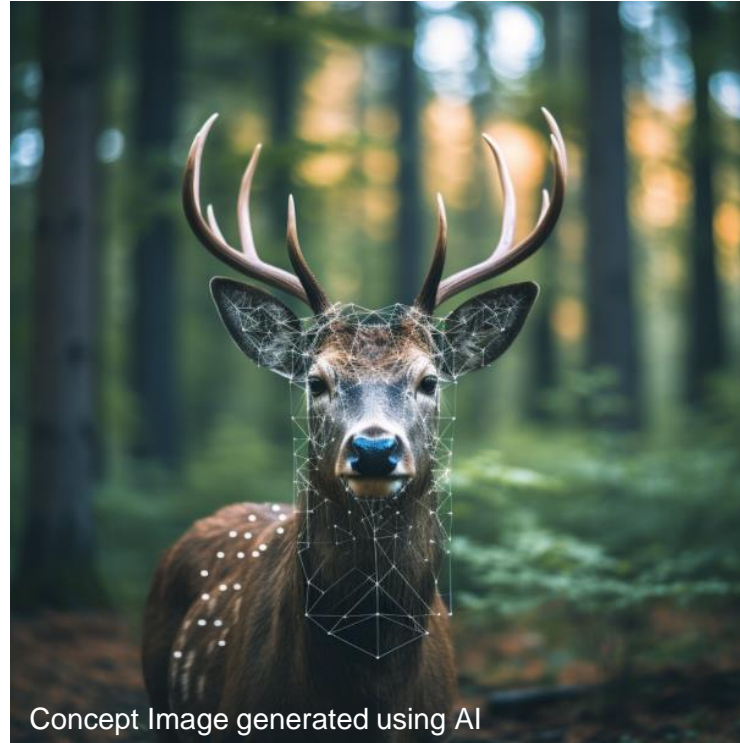
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# Scope

Helen Fox,  
Head of Innovation Strategy, Department for  
Environment, Food and Rural Affairs

# Next generation solutions for four challenge areas:

- Biodiversity and natural capital
- Soil health (including measuring soil carbon sequestration)





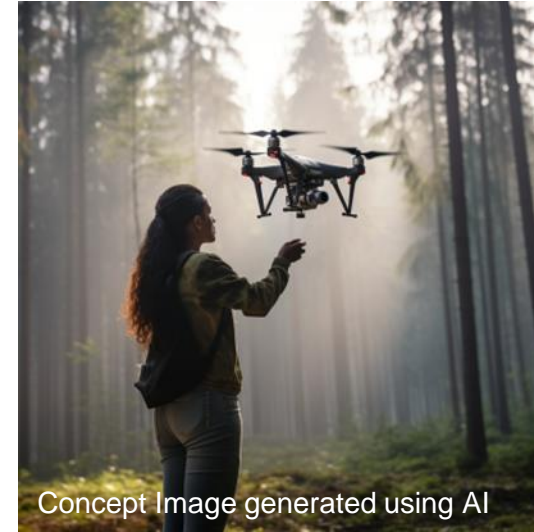
# Next generation solutions for four challenge areas:

- Freshwater or estuarine water quality (not marine)
- Monitoring greenhouse gas emissions from landfill, wastewater and agriculture



# Bidding consortia for this NERC-Defra funding opportunity should:

- Demonstrate an understanding of **UK monitoring capability needs** and highlight the **route to commercialisation**.
- Develop solutions which can be **applied widely in the real world** by end users e.g. public sector and/or UK private sector
- Be clear about which part(s) of the end-to-end monitoring system you are focusing on and why (for example, **data collection, processing, analysis or visualisation**)
- Be **collaborative and multi-disciplinary** across the environmental science, environment-focused informatics and wider data science communities





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# Specific requirements of funding opportunity

Dr Emma Morgan,  
Senior Programme Manager, Digital Environment,  
Infrastructure and Data, NERC-UKRI

# What we will fund

**£7m funding from NERC and Defra to fund 9—15 projects:**

- Award range: £450k-£750k at 100% for sensing system and capability development and testing
- Includes staff time directly associated with preparation of these assets
- Other resources funded at 80% FEC (e.g. workshops, meetings at NERC HO, policy-related activity, commercialisation activities). Maximum 20% of overall budget

We encourage:

- applications from interdisciplinary, cross-disciplinary and multidisciplinary consortia and collaborations between UK organisations
- inclusion of digital research technical professionals such as research software engineers and data scientists in applications
- applications that crossover into BBSRC's remit



# Who can apply

## Open to eligible researchers at:

- higher education institutions (HEIs)
- research council institutes (RCIs)
- approved independent research organisations (IROs)
- public sector research establishments (PSREs)
- Catapults

## Who is not eligible to apply

- You may be involved in **no more than two** applications submitted to this funding opportunity (only one as project lead)
- project leads and project co-leads **based outside the UK are not permitted**

**International collaborators, UK partners not based at approved organisations (including business or financial sectors) can be project partners.**

Project partners fund their own involvement - we will only fund minor incidental expenses, such as some travel costs

# How to apply

We are running this funding opportunity on the **UKRI Funding Service**. You cannot apply on the Joint Electronic Submissions (Je-S) system.

The project lead is responsible for completing the application process on the UKRI Funding Service, but we expect all team members and project partners to contribute to the application.

Only the lead research organisation can submit an application to UKRI.

**Closing date for applications: 7 November 2023 at 4.00pm UK time**

# How will we assess your application?

Assessment by independent panel of experts, using criteria:

- purpose
- vision & approach
- applicant and team capability to deliver
- ethics and responsible research and innovation
- data management and sharing

*Find details of assessment questions and criteria under the 'Application questions' heading in the AO.*

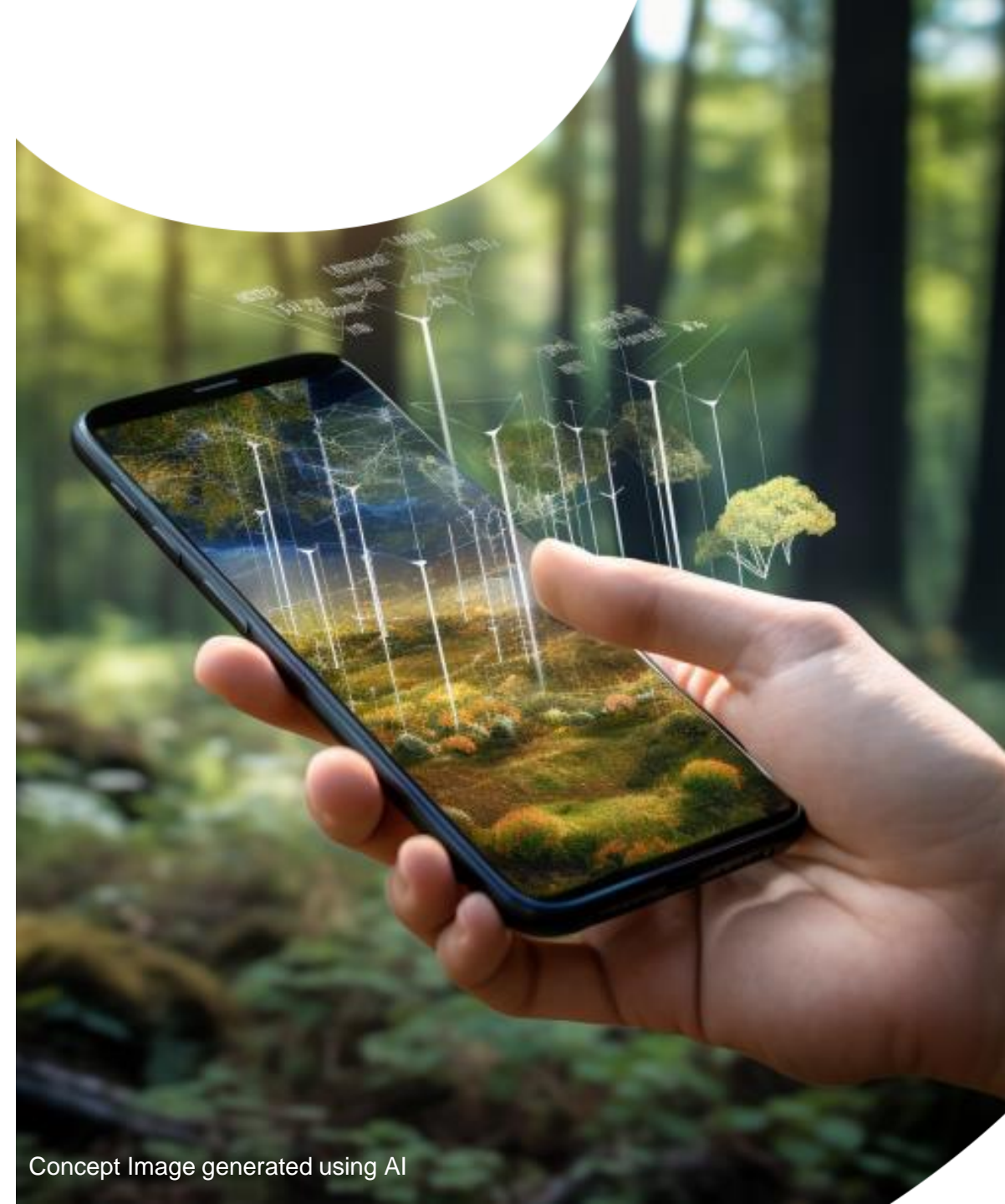
We are looking to fund work that:

- will deliver new and enhanced monitoring capabilities, which meet the strategic needs of UKRI and/or Defra
- impacts world-leading research, society, the economy or the environment
- is timely given current trends and context
- connects to and stimulates innovation, and has a clear pathway to further development

**Applications must have UK relevance, although wider applicability to other geographical regions is welcome**

# IEM Timeline

- **NERC-led opportunity:**
  - Funding opportunity closes: 7 November 2023
  - Assessment panel: December 2023
  - Awards start: by 1 March 2024 (up to 3 years)
- **Innovate-UK-led opportunity:**
  - Funding opportunity opens this Winter
  - Assessment panel Winter/ Spring
  - Awards start Summer 2024



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# Thank you



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# Questions?



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